

Claims

What is claimed is:

- 1                   1.       A method of assessing whether a patient is afflicted with prostate cancer, the  
2 method comprising comparing:  
3                   a)       the level of expression of a marker in a patient sample, wherein the marker is  
4 selected from the group consisting of the markers listed in Tables 1-1 to 6, and  
5                   b)       the normal level of expression of the marker in a control non-prostate cancer  
6 sample,  
7                   wherein a significant difference between the level of expression of the marker in the  
8 patient sample and the normal level is an indication that the patient is afflicted with prostate cancer.
- 1                   2.       The method of claim 1, wherein the marker corresponds to a secreted protein.
- 1                   3.       The method of claim 1, wherein the marker corresponds to a transcribed  
2 polynucleotide or portion thereof, wherein the polynucleotide comprises the marker.
- 1                   4.       The method of claim 1, wherein the sample comprises cells obtained from the  
2 patient.
- 1                   5.       The method of claim 4, wherein the sample is a prostate tissue sample.
- 1                   6.       The method of claim 4, wherein the cells are in a fluid selected from the  
2 group consisting of blood fluids, semen, prostate fluid, lymph and urine.
- 1                   7.       The method of claim 1, wherein the level of expression of the marker in the  
2 sample is assessed by detecting the presence in the sample of a protein or protein fragment  
3 corresponding to the marker.

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1                   8.       The method of claim 7, wherein the presence of the protein or protein  
2 fragment is detected using a reagent which specifically binds with the protein or protein fragment.

1                   9.       The method of claim 8, wherein the reagent is selected from the group  
2 consisting of an antibody, an antibody derivative, and an antibody fragment.

1                   10.      The method of claim 1, wherein the level of expression of the marker in the  
2 sample is assessed by detecting the presence in the sample of a transcribed polynucleotide or  
3 portion thereof, wherein the transcribed polynucleotide comprises the marker.

1                   11.      The method of claim 10, wherein the transcribed polynucleotide is an mRNA.

1                   12.      The method of claim 10, wherein the transcribed polynucleotide is a cDNA.

1                   13.      The method of claim 10, wherein the step of detecting further comprises  
2 amplifying the transcribed polynucleotide.

1                   14.      The method of claim 1, wherein the level of expression of the marker in the  
2 sample is assessed by detecting the presence in the sample of a transcribed polynucleotide which  
3 anneals with the marker or anneals with a portion of a polynucleotide wherein the polynucleotide  
4 comprises the marker, under stringent hybridization conditions.

1                   15.      The method of claim 1, wherein the level of expression of the marker in the  
2 sample differs from the normal level of expression of the marker in a patient not afflicted with  
3 prostate cancer by a factor of at least about 2.

1                   16.      The method of claim 1, wherein the level of expression of the marker in the  
2 sample differs from the normal level of expression of the marker in a patient not afflicted with  
3 prostate cancer by a factor of at least about 5.

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1           17.    The method of claim 1, comprising comparing:  
2           a)    the level of expression in the sample of each of a plurality of markers  
3 independently selected from the markers listed in Tables 1-1 to 6, and  
4           b)    the normal level of expression of each of the plurality of markers in samples  
5 of the same type obtained from control humans not afflicted with prostate cancer,  
6           wherein the level of expression of more than one of the markers is significantly  
7 altered, relative to the corresponding normal levels of expression of the markers, is an indication  
8 that the patient is afflicted with prostate cancer.

1           18.    The method of claim 17, wherein the level of expression of each of the  
2 markers is significantly altered, relative to the corresponding normal levels of expression of the  
3 markers, is an indication that the patient is afflicted with prostate cancer.

1           19.    The method of claim 17, wherein the plurality comprises at least three of the  
2 markers.

1           20.    The method of claim 17, wherein the plurality comprises at least five of the  
2 markers.

1           21.    A method for monitoring the progression of prostate cancer in a patient, the  
2 method comprising:

3           a)    detecting in a patient sample at a first point in time, the expression of a  
4 marker, wherein the marker is selected from the group consisting of the markers listed in Tables 1-1  
5 to 6;  
6           b)    repeating step a) at a subsequent point in time; and  
7           c)    comparing the level of expression detected in steps a) and b), and therefrom  
8 monitoring the progression of prostate cancer.

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1                   22.     The method of claim 21, wherein the marker corresponds to a secreted  
2     protein.

1                   23.     The method of claim 21, wherein the marker corresponds to a transcribed  
2     polynucleotide or portion thereof, wherein the polynucleotide comprises the marker.

1                   24.     The method of claim 21, wherein the sample comprises cells obtained from  
2     the patient.

1                   25.     The method of claim 24, wherein the patient sample is a prostate tissue  
2     sample.

1                   26.     The method of claim 21, wherein between the first point in time and the  
2     subsequent point in time, the patient has undergone surgery to remove prostate tissue.

1                   27.     A method of assessing the efficacy of a test compound for inhibiting prostate  
2     cancer in a patient, the method comprising comparing:

3                   a)     expression of a marker in a first sample obtained from the patient and  
4     exposed to the test compound, wherein the marker is selected from the group consisting of the  
5     markers listed in Tables 1-1 to 6, and

6                   b)     expression of the marker in a second sample obtained from the patient,  
7     wherein the sample is not exposed to the test compound,  
8                   wherein a significantly lower level of expression of the marker in the first sample,  
9     relative to the second sample, is an indication that the test compound is efficacious for inhibiting  
10    prostate cancer in the patient.

1                   28.     The method of claim 27, wherein the first and second samples are portions of  
2     a single sample obtained from the patient.

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1                   29.     The method of claim 27, wherein the first and second samples are portions of  
2     pooled samples obtained from the patient.

1                   30.     A method of assessing the efficacy of a therapy for inhibiting prostate cancer  
2     in a patient, the method comprising comparing:

3                   a)     expression of a marker in the first sample obtained from the patient prior to  
4     providing at least a portion of the therapy to the patient, wherein the marker is selected from the  
5     group consisting of the markers listed in Tables 1-1 to 6, and

6                   b)     expression of the marker in a second sample obtained from the patient  
7     following provision of the portion of the therapy,

8                   wherein a significantly lower level of expression of the marker in the second sample,  
9     relative to the first sample, is an indication that the therapy is efficacious for inhibiting prostate  
10    cancer in the patient.

1                   31.     A method of selecting a composition for inhibiting prostate cancer in a  
2     patient, the method comprising:

3                   a)     obtaining a sample comprising cancer cells from the patient;

4                   b)     separately exposing aliquots of the sample in the presence of a plurality of  
5     test compositions;

6                   c)     comparing expression of a marker in each of the aliquots, wherein the marker  
7     is selected from the group consisting of the markers listed in Tables 1-1 to 6; and

8                   d)     selecting one of the test compositions which alters the level of expression of  
9     the marker in the aliquot containing that test composition, relative to other test compositions.

1                   32.     A method of inhibiting prostate cancer in a patient, the method comprising:

2                   a)     obtaining a sample comprising cancer cells from the patient;

3                   b)     separately maintaining aliquots of the sample in the presence of a plurality of  
4     test compositions;

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5 c) comparing expression of a marker in each of the aliquots, wherein the marker  
6 is selected from the group consisting of the markers listed in Tables 1-1 to 6; and

7 d) administering to the patient at least one of the test compositions which alters  
8 the level of expression of the marker in the aliquot containing that test composition, relative to other  
9 test compositions.

1 33. A kit for assessing whether a patient is afflicted with prostate cancer, the kit  
2 comprising a marker selected from the group consisting of the markers listed in Tables 1-1 to 6.

1 34. A kit for assessing the presence of prostate cancer cells, the kit comprising a  
2 nucleic acid probe wherein the probe specifically binds with a transcribed polynucleotide  
3 corresponding to a marker selected from the group consisting of the markers listed in Tables 1-1 to  
4 6.

1 35. A kit for assessing the suitability of each of a plurality of compounds for  
2 inhibiting prostate cancer in a patient, the kit comprising:

3 a) the plurality of compounds; and  
4 b) a reagent for assessing expression of a marker selected from the group  
5 consisting of the markers listed in Tables 1-1 to 6.

1 36. A method of making an isolated hybridoma which produces an antibody  
2 useful for assessing whether a patient is afflicted with prostate cancer, the method comprising:  
3 isolating a protein or protein fragment corresponding to a marker selected from the  
4 group consisting of the markers listed in Tables 1-1 to 6;  
5 immunizing a mammal using the isolated protein or protein fragment;  
6 isolating splenocytes from the immunized mammal;  
7 fusing the isolated splenocytes with an immortalized cell line to form hybridomas;  
8 and

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9 screening individual hybridomas for production of an antibody which specifically  
10 binds with the protein or protein fragment to isolate the hybridoma.

1 37. An antibody produced by a hybridoma made by the method of claim 36.

1 38. A kit for assessing the presence of human prostate cancer cells, the kit  
2 comprising an antibody, wherein the antibody specifically binds with a protein or protein fragment  
3 corresponding to a marker selected from the group consisting of the markers listed in Tables 1-1 to  
4 6.

1 39. A method of assessing the prostate cell carcinogenic potential of a test  
2 compound, the method comprising:

3 a) maintaining separate aliquots of prostate cells in the presence and absence of  
4 the test compound; and

5 b) comparing expression of a marker in each of the aliquots, wherein the marker  
6 is selected from the group consisting of the markers listed in Tables 1-1 to 6,

7 wherein a significantly altered level of expression of the marker in the aliquot  
8 maintained in the presence of the test compound, relative to the aliquot maintained in the absence of  
9 the test compound, is an indication that the test compound possesses human prostate cell  
10 carcinogenic potential.

1 40. A kit for assessing the prostate cell carcinogenic potential of a test  
2 compound, the kit comprising prostate cells and a reagent for assessing expression of a marker,  
3 wherein the marker is selected from the group consisting of the markers listed in Tables 1-1 to 6.

1 41. A method of inhibiting prostate cancer in a patient at risk for developing  
2 prostate cancer, the method comprising inhibiting expression of a gene corresponding to a marker  
3 selected from the markers listed in Tables 1-1 to 6, wherein the gene is overexpressed in prostate  
4 cancer.

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1                   42.     The method of claim 41, further comprising the step of providing to cells of  
2     the patient an antisense oligonucleotide complementary to a polynucleotide corresponding to a  
3     marker selected from the markers listed in Tables 1-1 to 6.

1                   43.     A method of inhibiting prostate cancer in a patient at risk for developing  
2     prostate cancer, the method comprising increasing expression of a gene corresponding to a marker  
3     selected from the markers listed in Tables 1-1 to 6, wherein the gene is underexpressed in prostate  
4     cancer or expressed in normal prostate tissue.

1                   44.     A method for determining whether prostate cancer has metastasized in a  
2     patient, the method comprising comparing:  
3                   a)     the level of expression of a marker in a patient sample, wherein the marker is  
4     selected from the group consisting of the markers listed in Tables 1-1 to 6, and  
5                   b)     the normal level or non-metastatic level of expression of the marker in a  
6     control sample  
7                   wherein a significant difference between the level of expression in the patient sample  
8     and the normal level or non-metastatic level is an indication that the prostate cancer has  
9     metastasized.

1                   45.     The method of claim 44, wherein the marker corresponds to a secreted  
2     protein.

1                   46.     The method of claim 44, wherein the marker corresponds to a transcribed  
2     polynucleotide or portion thereof, wherein the polynucleotide comprises the marker.

1                   47.     The method of claim 44, wherein the sample comprises cells obtained from  
2     the patient.

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1                   48.     The method of claim 47, wherein the patient sample is a prostate tissue  
2     sample.

1                   49.     A method for assessing the aggressiveness or indolence of prostate cancer  
2     comprising comparing:

3                   a)     the level of expression of a marker in a sample, wherein at least one marker is  
4     selected from the markers of Tables 1-1 to 6, and

5                   b)     the normal level of expression of the marker in a control sample,  
6                   wherein a significant difference between the level of expression in the sample and  
7     the normal level is an indication that the cancer is aggressive or indolent.

1                   50.     The method of claim 49, wherein the marker corresponds to a secreted  
2     protein.

1                   51.     The method of claim 49, wherein marker corresponds to a transcribed  
2     polynucleotide or portion thereof, wherein the polynucleotide comprises the marker.

1                   52.     The method of claim 49, wherein the sample comprises cells obtained from  
2     the patient.

1                   53.     The method of claim 52, wherein the patient sample is a prostate tissue  
2     sample.

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1                   54.     A system for identifying selected polynucleotide records that identify a  
2 prostate cancer cell, the system comprising:  
3                   a digital computer;  
4                   a database coupled to the computer;  
5                   a database coupled to the database server having data stored therein, the data  
6 comprising records of data comprising a polynucleotide corresponding to a marker from the  
7 markers in Tables 1-1 to 6; and  
8                   a code mechanism for applying queries based upon a desired selection criteria to the  
9 data file in the database to produce reports of polynucleotide records which match the desired  
10 selection criteria.

1                   55.     A method for detecting a prostate cancer cell, using a computer having a  
2 processor, memory, display, and input/output devices, the method comprising the steps of:  
3                   a)     providing a sequence of a polynucleotide isolated from a sample suspected of  
4 containing a prostate cancer cell;  
5                   b)     providing a database comprising records of data comprising a polynucleotide  
6 corresponding to a marker from the markers in Tables 1-1 to 6; and  
7                   c)     using a code mechanism for applying queries based upon a desired selection  
8 criteria to the data file in the database to produce reports of polynucleotide records of step a) which  
9 provide a match of the desired selection criteria of the sequences in the database of step b), the  
10 presence of a match being a positive indication that the polynucleotide of step 1) has been isolated  
11 from a cell that is a prostate cancer cell.

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